Rijksinstituut voor Volksgezondheid en Milieu
Ministerie van Volksgezondheid, Welzijn en Sport

Stofdocument deel A

CAS-nr: 382-21-8
C_4F_8

Perfluorisobutyleen

VN-nr: 3162
GEVI: 26

Synoniemen: perfluorisobuteen, PFIB, 1-propene, 1,1,3,3,3-pentafluoro-2-(trifluoromethyl) (Engels: perfluoroisobutylene)

Interventiewaarden		10 min.	30 min.	1 uur	2 uur	4 uur	8 uur
Voorlichtingsrichtwaarden	**VRW (mg/m^3)**	NA	NA	NA	NA	NA	NA
Alarmeringsgrenswaarden	**AGW (mg/m^3)**	5,7	1,8	0,93	0,47	0,23	0,12
Levensbedreigende waarden	**LBW (mg/m^3)**	17	5,5	2,8	1,4	0,69	0,35
Datum vaststelling: 16-10-2018				1 mg/m^3 = 0,120 ppm; 1 ppm = 8,321 mg/m^3			

Explosiegrens: geen data

Geur: geurloos
LOA: -

Fysisch-chemische eigenschappen

Uiterlijk: kleurloos (vloeibaar gemaakt) gas
Brand:-

Relatieve dichtheid van gas-lucht mengsel: 6,3

Molecuulmassa:	200,03 g/mol
Zuurgraad:	geen data
LogKow:	3,03
Wateroplosbaarheid:	0,011 g/100 ml
Verzadigde dampdruk:	2320 mbar (bij 25 ºC)

Overige informatie

Publieke grenswaarde: 0,082 mg/m^3
MAK: niet afgeleid
TLV-TWA: niet afgeleid
TLV-STEL: 0,083 mg/m^3

Toxicologische eigenschappen

Effecten bij inhalatoire blootstelling

Onder AGW: keelpijn en hoesten

AGW → LBW: pijn op de borst, angst/onrust, kortademigheid, tachycardie, toenemende cyanose

Boven LBW: bloed ophoesten, ademnood, verstikking, circulatoire collaps

LET OP: De afwezigheid van een VRW betekent niet dat blootstelling onder de AGW zonder effecten is.

Toxiciteit bij eenmalige, inhalatoire blootstelling

- PFIB kan de permeabiliteit van capillaire bloedvaten verhogen, met bloedingen in alle blootgestelde organen als gevolg. Daarbij zijn de longen het meest gevoelige orgaan voor dit effect.
- Lagere concentraties kunnen na een symptoomvrij interval van 4 – 24 u aanleiding geven tot effecten die snel verergeren (tot circulatoire collaps).
- Hogere concentraties kunnen vrij snel tot een ernstig, hemorragisch longoedeem leiden; sterfte treedt meestal binnen 2 uur na blootstelling op.

Effecten bij blootstelling aan vloeistof

Huidcontact: bevriezingsletsel (gas: geringe irritatie)

Oogcontact:bevriezingsletsel (gas: geringe irritatie)

Carcinogeniteit

IARC classificatie: niet geëvalueerd
CRP: niet afgeleid

Beknopte medische informatie

Ontsmetting gas

algemeen: frisse lucht (indien mogelijk zuurstof), GEEN mond-op-mondbeademing, vermijd inspanning (rust), half-zittende houding en direct spoedeisende medische hulp inzetten.

Ontsmetting vloeistof

huid: kleding uittrekken (NIET lostrekken), direct spoelen met veel water (minimaal 20 min.), dan pas eventueel aan de huid vastgeplakte kleding verwijderen en verder spoelen, direct spoedeisende medische hulp inzetten.

ogen: minimaal 15 min. spoelen met water (evt. contactlenzen verwijderen), dan naar oogarts brengen, blijven spoelen tijdens vervoer.

inslikken: mond laten spoelen (uitspugen!), GEEN braken opwekken, niet laten drinken en direct spoedeisende medische hulp inzetten.

Specifieke behandeling en materialen*:* hulpverleners denk aan *persoonlijke (adem)bescherming.*
Neem contact op met het NVIC (tel: 030 274 8888) voor informatie met betrekking tot medisch handelen.

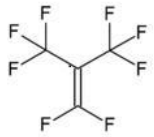
National Institute for Public Health and the Environment
Ministry of Health, Welfare and Sport

Stofdocument deel B

CAS-nr: 382-21-8
C_4F_8

Perfluoroisobutylene

UN-nr: 3162



Basis for the Dutch Intervention Values	
VRW:	Not recommended due to insufficient data, in accordance with the AEGL
AGW:	Same rationale as for AEGL (one-third of LBW), 2h value added
LBW:	AEGL value is adopted, 2h value added
Date: 16-10-2018	AEGL, interim (2010)

Dutch Intervention Values (mg/m^3)

	10 min	30 min	1 h	2 h	4 h	8 h	End point
VRW	NR	NR	NR	NR	NR	NR	(insufficient data)
AGW	5.7	1.8	0.93	0.47	0.23	0.12	1/3 LBW
LBW	17	5.5	2.8	1.4	0.69	0.35	Threshold of lethality in rats

Derivation of the Dutch Intervention Values

VRW: No appropriate human or animal data are available for derivation of VRW for perfluoroisubytulene (PFIB). Therefore VRW values are not recommended. This does not imply that exposure below AGW is without adverse effects.

AGW: In the absence of appropriate chemical-specific data, the LBW values are divided by 3 to derive AGW values for PFIB. This approach is justified by the steep concentration-response curve observed in several animal studies. No rats died when exposed to 0.25 ppm (2.08 mg/m^3) PFIB for 4 hours; whereas 100% lethality (6/6) was noted at 0.5 ppm (4.16 mg/m^3) for 4 hours. No mortality was noted in rats, mice, 1 guinea pig, and rabbits exposed to approximately 0.70 ppm (5.82 mg/m^3) PFIB for 2 hours; whereas, 10/10 rats, 10/10 mice, 4/5 guinea pigs, and 3/3 rabbits died when exposed to 1.5 ppm (12.48 mg/m^3) for two hours.

LBW: The LBW is based on a study in which male rats (6/conc) were exposed for 4 hours to concentrations of 0.25, 0.5 or 1.0 ppm (2.08, 4.16 and 8.32 mg/m^3, respectively). No mortality occurred in rats when exposed to 2.08 mg/m^3 PFIB for 4-hours, whereas all rats died (6/6) at 4.16 mg/m^3 for 4 hours. Clinical signs were noted at 2.08 mg/m^3 and included face washing, hyperemia, sneezing, hypernea, dyspnea, and decreased responsiveness. The highest non-lethal concentration of 2.08 mg/m^3 was used as PoD for deriving LBWs.
In a C x t acute lethality study, rats (10/concentration) were exposed to different concentrations of PFIB, ranging from 10 ppm to 832 ppm for various exposure durations ranging from 0.25 to 10 minutes, e.g. 1 minute to 100, 102, 106, 130, 158 and 832 ppm (832, 849, 882, 1082, 1315 and 6923 mg/m^3, respectively). Although an extrapolation from a 10 minute POD to an exposure duration of 8 hours is not considered reliable, using the C x t study as basis for derivation for the LBW would lead to similar values and can be considered as supportive.
The default uncertainty factor of 3 was considered sufficient to account for intraspecies differences. The interspecies UF of 1 is used instead of the default value of 3, because lethality data available for several animal species suggest little interspecies variability; the LC_{50} values for given exposure durations are essentially equivalent. Time scaling was applied using the equation $C^n \times t = k$ with the chemical specific value of n=1 (based on analysis of available LC_{50} data) when extrapolating to longer and shorter time points.

Additional toxicological information (including relevant results of a general literature search, if any)

PFIB may exert its toxic effect by depletion of intracellular nucleophiles, including amines, thiols and

alcohols. PFIB-induced tissue damage appears to result from rapid interaction with cells that are either in, or in close proximity to, the respiratory airways. PFIB is a hydrophobic gas that induces a permeability-type edema.

Frequently it is stated that PFIB is10× more toxic than phosgene, however it is not clear what the basis for this statement is. The intervention values for PFIB are primarily based on substance-specific data.

Information on reproductive toxicity is not available for PFIB.

Health effects may be delayed.

No harmonised H-statements for human health.

Carcinogenicity and derivation of the CRP value	***Odour and derivation of the LOA value***
IARC classification: not evaluated No carcinogenic risk potency (CRP) was derived	No LOA was derived.

Other standards and guidelines *(1h values in mg/m^3, unless otherwise indicated)* [a]

VRW level **NR**	*AEGL-1* -	*ERPG-1* -		*IDLH: -*
AGW level **0.93**	*AEGL-2* 0.90	*ERPG-2* 0.83		
LBW level **2.8**	*AEGL-3* 2.7	*ERPG-3* 2.5		

[a] Note that the AEGL values as presented here (in mg/m^3) are derived using the conversion factors of the AEGL. The ERPG values are derived using the conversion factor as described in part A.